ROHIT PAUL

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Objective

Aspiring Remote Sensing, Robotics, and Game Development Researcher with a strong foundation in atmospheric remote sensing, space-based LiDAR, 3D modeling, and interactive media. Experienced in geophysical data analysis, mechanical design, and immersive simulation. Proficient in MATLAB, Unreal Engine, Unity, ROS, SolidWorks, AutoCAD, C#, C++, computer vision, and AR/VR. Passionate about advancing robotics and remote sensing through AI/ML-powered design, bioinspired mechanisms, human-machine interaction, environmental monitoring, atmospheric and cloud exploration, and geophysical research.

Education

Gauhati University **2021 – 2025**

Bachelor of Technology in (Information Technology) *CGPA: 8.53/10.0*

Work Experience

Physical Research Laboratory, Ahmedabad (PRL, ISRO) **Jan 2025 – Present**

Final Year Research Intern *Onsite*

- Worked under the supervision of **Prof. Som Kumar Sharma**, on the project title "Development of Satellite-based LIDAR for Cloud and Atmospheric Explorations."
- Developed and optimized laser and path configurations using Zemax OpticStudio, ensuring enhanced laser simulation accuracy and system efficiency for space-based LIDAR applications.
- Implemented a detailed space-based LIDAR simulation in Unreal Engine that integrated a laser CAD model, synthesizing simulation physics with CAD design to accurately predict real-world laser behavior in satellite applications.
- Currently engaged in an in-depth research investigation on the 2022 eruption of Mount Hunga Tonga-Hunga Haapai, analyzing geophysical data, modeling volcanic activity, and assessing eruption impacts using advanced analytical tools to provide valuable insights to volcanology.

Indian Institute of Technology, Goa (IIT, Goa) **Jul 2024 – Present**

Summer Research Intern *Onsite/Remote*

- Worked under the supervision of **Dr. Sharad Sinha**, developing a bike simulation in Unreal Engine, creating animation blueprints and implementing adaptive traffic systems.
- Developed a realistic bike simulation using Unreal Engine 5, focusing on replicating accurate real-world dynamics through advanced physics modeling.
- Implemented detailed physics algorithms and simulated essential traffic regulations, enabling the simulation to accurately reflect real-life road interactions and safety scenarios.
- Leveraged the simulation to analyze diverse traffic conditions, contributing to road safety awareness initiatives by providing insights into realistic traffic behavior and potential hazard scenarios.

Jadavpur University, Kolkata (JU, Kolkata) **Jul 2023 – Aug 2023**

Summer Research Intern *Onsite*

- Worked under the supervision of **Dr. Sudip Kumar Naskar**, improving MCQ generation from text using analysis techniques, text classification, and regional translation
- Enhanced NLP performance by optimizing PKE, RAKE, and distractor generation methods, leading to improved accuracy and efficiency in text processing.
- Developed an MCQ-to-text generator, enabling automated question-to-content conversion for educational and assessment purposes, quiz, etc.
- Implemented an MCQ-based bidirectional English-Bengali translation system using the RAKE model, ensuring accurate and context-aware language conversion.

Da"Spatio Rhobotique Laboratory Pvt. Ltd. (DSRL Global, IIT Guwahati) **May 2023 – Present**

Research And Development Intern *Onsite/Remote*

- Worked as an Environmental Artist, developing highly detailed and interactive landscapes in Unreal Engine 5 while assisting in robotic simulation projects at ISDC, DSRL.
- Designed and developed highly detailed summer, winter, and rocky mountain environments in Unreal Engine, tailored specifically for realistic robotic navigation and advanced simulation scenarios.
- Enhanced robotic vision algorithms by implementing a novel feature extraction technique, significantly improving object detection accuracy, recognition capabilities, and overall performance on widely used benchmark datasets.
- Implemented, fine-tuned, and optimized YOLO-based deep learning vision models, leading to more precise real-time object recognition, improved detection accuracy, and enhanced computational efficiency for robotics applications.

Projects

LexisignAR: AR-Glass for Disabled People | *Unity, C#, OpenCV, NLP, Rpi Zero 2W* **Aug 2024 – Present**

- Developed an AR-based sign language translation system using Unity, converting 2D ASL (American Sign Language) hand structures into interactive 3D models for real-time visualization.
- Building a wearable AR glass by integrating Raspberry Pi Zero 2W, an OLED transparent display, and a custom 3D-printed frame for seamless user interaction.
- Implemented CNN-based hand sign detection using a VGG16 architecture for precise gesture recognition and real-time text-to-sign conversion, improving communication accessibility.
- Optimized AR rendering and hardware integration, ensuring stable performance, clear visuals, and seamless interaction on mobile and AR-compatible devices.

Fish-0-Bot (Fish Robot) | *Fusion 360, ESP32, RPi, UE5, Plasticity* **Jun 2024 – Present**

- Developing a bio-inspired robotic fish for underwater exploration, integrating object detection and real-time data processing for autonomous navigation in Unreal Engine.
- Designed the CAD model on Plasticity and refined the mechanical framework using Fusion 360 for optimal performance, reliability, efficiency, and precision.
- Simulated sensor-based detection (ultrasonic, motion, temperature, accelerometer, gyroscope) for stability using ESP32, and currently working on Raspberry Pi 4 integration.
- Future scope includes an ArduCamera with Raspberry Pi 4 (simulation) for night vision object detection, enhancing underwater visibility and adaptive environmental responses.

AR Navigation for Complex Indoor Environments | *Unity, C#, OpenCV* **Feb 2024 – Jun 2024**

- Designed an AR-powered indoor navigation system using Unity and AR Foundation to assist users in navigating complex indoor spaces like hospitals, malls, airports, and public buildings.
- Improved navigation accuracy with intuitive AR interfaces, clear visual markers, adaptive path guidance, real-time feedback, and enhanced user experience.
- Enhanced accessibility by implementing real-time AR overlays for precise indoor wayfinding and obstacle detection.
- Optimized mobile compatibility, ensuring smooth performance across various devices for indoor navigation assistance.

Seed Master | *Unreal Engine 5, Sketchfab, Blender* **Mar 2024 – Apr 2024**

- The Seed Master is an advanced agricultural robot designed to automate seed sowing, soil watering, and efficient soil mixing, reducing farmer labor and optimizing farming practices.
- Enhances agricultural productivity by ensuring precise seed placement, improving soil conditions, and streamlining the planting process for large-scale farming.
- Reduces manual labor dependency by automating critical farming operations, increasing planting efficiency, and supporting sustainable agricultural methods.
- ***This project has been selected by the Ninjacart Hackathon (Bengaluru, 2024) and Innovathon by Assam Startup (Assam, 2024).***

Prescribo | *Flutter, GeminiAPi, Firebase, Figma* **Dec 2023 – Apr 2024**

- Developed Prescribo, a healthcare management system that simplifies medication management, prescription storage, patient-doctor communication, and overall medical accessibility.
- Enabled users to manage prescriptions efficiently, receive timely medication reminders, track health records, and stay updated with the latest medical news.
- Integrated features for online medicine ordering, AI-driven health insights, and direct consultations with doctors, ensuring a seamless and accessible healthcare experience.
- ***This project has been selected for the Google Solution Challenge 2024, (Regional Level, India).***

Drop Guardian | *ReactJS, Python, Flask, Intel OneApi, Firebase, Figma* **Apr 2023 – Jun 2023**

- Led the development of an advanced dropout prevention tool, integrating data analytics and intervention strategies to tackle key causes of student disengagement during COVID-19.
- Implemented advanced machine learning algorithms to predict and support students at risk of dropping out, achieving high identification accuracy and optimizing early intervention.
- Focused on significantly improving student retention by addressing pandemic-related challenges such as financial instability, educational access, mental health, and digital divide.
- ***This project secured the Intel One API Hackathon award 2023, (IISc Bengaluru, India).***

Academic Achievements

- **CEE (2021):** Secured a merit rank of **754**.
- **WBJEE (2021):** Secured a merit rank of **6696**.
- **COMEDK (2021):** Secured a merit rank of **17645**.

Technical Skills

Languages: C, C++, C#, Python, Java, JavaScript, R, SQL

Developer Tools: Unity, Unreal Engine, ROS, Figma, Flutter, Android Studio, VS Code, Fusion 360, Plasticity

Frameworks: NodeJS, ReactJS

Technologies: AI/ML, Computer Vision, NLP, Signal Processing, Git, AR/VR, MongoDB, MySQL, Postman

Remote Sensing & GIS Tools: QGIS, ENVI, ERDAS Imagine, SNAP Toolbox, Google Earth Engine

Positions of Responsibility

Microsoft Learn Student Ambassadors (MLSA) **Jul '23 – Aug '24**

MLSA Lead *Gauhati University*

- Organized multiple MLSA events and workshops, including Git/GitHub sessions promoting open-source contributions.
- Collaborated with fellow ambassadors to plan technical campaigns across disciplines.
- Mentored students in Microsoft Learn paths, helping them gain certifications and project experience.
- Initiated and led peer-learning groups to support upskilling in cloud technologies and developer tools.
- Strengthened campus tech community engagement through outreach, surveys, and feedback-driven improvement.

Google Developer Student Clubs (GDSC) **Aug '23 – Aug '24**

Flutter Lead *Gauhati University*

- Hosted **CODEGEM**, the university's first coding event, promoting a hands-on development culture.
- Conducted regular workshops and bootcamps on Flutter, Firebase, and cross-platform mobile development.
- Mentored over 100 students for GDSC programs like Solution Challenge, Cloud Arcade, and Compose Camp.
- Designed project-based learning modules to help beginners build real-world Flutter applications.
- Led collaboration between departments to increase cross-functional participation in GDSC events.

Certification and Extracurricular Achievements

- **Intel OneAPI Hackathon**: Secured the Runner-Up position in the all-India Intel OneAPI Hackathon.
- **GDSC Solution Challenge (Regional India) (3X)**: Awarded three times for developing innovative solutions.
- **ISRO Certification**: Successfully completed the Global Navigation Satellite System (GNSS) program.
- **ISRO Certification**: Completed the Space Science and Technology Awareness Training (START) program.
- **NESAC (ISRO)**: Participated in the NESAC USER INTERACTION MEET (NeUIM - 2024).
- **IIIT SriCity**: Participate in SERB Sponsored Workshop on Spatial Data Analytics.
- **Codestellation Hackathon**: Achieved 4th place in the prestigious Codestellation Hackathon.
- **IIT Guwahati Android App Development Competition**: Secured 2nd place in the IIT Guwahati competition.
- **IIT Guwahati BioNest Hackathon**: Finalist among 30 competing teams in a national-level hackathon.
- **Healthathon Hackathon**: Selected for the first phase of the competition.
- **UTKRANTI 5.0 Hackathon**: Active participant in the innovation-driven competition.
- **Embedded Systems Workshop**: Gained hands-on experience in embedded system development.